

DOCUMENT RESUME

ED 163 814

FL 009 947

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TITLE Childhood Bilingualism and Adult Language Learning
Aptitude, CUNY Forum, No. 3.
INSTITUTION City Univ. of New York, N.Y. Graduate School and
Univ. Center. Program in Linguistics.
PUB DATE 77
NOTE 21p.
EDRS PRICE MF-\$0.83 HC-\$1.67 Plus Postage.
DESCRIPTORS *Adult Learning; *Aptitude; Aptitude Tests; Bilingual
Education; *Bilingualism; Childhood; Cognitive
Ability; College Students; *Language Ability;
*Language Development; Language Proficiency; Language
Research; Language Skills; Multilingualism;
Psycholinguistics; *Second Language Learning

ABSTRACT

This paper investigates the influence childhood bilingualism has on adult foreign language learning ability. Early research exploring the influence of bilingualism on general intelligence is mentioned as well as recent studies that present more favorable results. It is hypothesized that childhood bilingualism will have a positive effect on adult foreign language learning aptitude. Bilingualism is defined, and the bilinguals in this study are limited to those who acquired a second language before puberty. The subjects for this experiment were 93 college students, all either native Americans or those who had arrived in the U.S. before age 5 and had native proficiency in English. They were given the Modern Language Aptitude Test (MLAT) and were asked to rate the importance of foreign language learning as an asset. For comparison purposes, the subjects were divided into the following groups: monolinguals, bilinguals, bilinguals with formal education, bilinguals without formal education, polylinguals, and simple bilinguals. The findings point towards the conclusion that bilingualism in childhood is a positive factor in adult second language learning aptitude. Formal education may be a positive factor for formal learning situations although it may have a negative effect on the self confidence of the learner. Learning several languages in childhood appears to have a cumulative positive effect. (NCR)

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CHILDHOOD BILINGUALISM AND ADULT LANGUAGE LEARNING APTITUDE

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Introduction

The influence of bilingualism on the child has been frequently and passionately debated in recent years. Yet, in spite of the extent to which this subject has been brought to the public consciousness, a more objective evaluation of bilingualism and its consequences remains a goal for the future. Some people informally state that individuals who used two or more languages as children find it easier to acquire additional languages as adults. The purpose of this paper is to investigate whether bilingualism in childhood does in fact have a positive influence on adult foreign language learning ability.

Much research has been done in an effort to explore the influence of bilingualism on general intelligence. At first, there appeared to be some evidence to indicate that bilingualism might have a negative effect on certain aspects of intelligence (Ben Zeev, 1977). When Peal and Lambert (1972) reviewed the literature, they noted "only two empirical studies were encountered that suggested that bilingualism may have favorable intellectual consequences." The

I wish to thank Stephen Krashen for his help and encouragement in the preparation of this paper.

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early negative findings have been criticized on various levels. A serious drawback of this research was that bilingual and monolingual groups were not properly matched for socioeconomic factors. As a result, it is possible that the lower scores attributed to bilinguals as compared with monolinguals may have been reflections of the relatively lower socioeconomic status of the bilinguals tested. A further criticism of the early work has to do with the nature of the IQ tests themselves. For example, Einar Haugen (1956) feels that traditional IQ tests are not appropriate measures for bilinguals. Haugen takes the view that "fairness to the bilingual would demand that he be given tests in both languages." A further complication of this problem is the fact that even speakers of the same language do not necessarily share the same culture, and tests may be culturally as well as linguistically biased.

Recent studies using more carefully controlled populations have yielded more favorable results. Peal and Lambert (1972) found that "contrary to previous findings,...bilinguals performed significantly better than monolinguals on both verbal and non-verbal intelligence tests." Peal and Lambert suggest a possible explanation for this superior performance on the part of bilinguals is that bilinguals are more flexible at concept formation, have a greater mental flexibility, and have a "language asset."

This paper will investigate one aspect of the proposed "language asset," namely, the ability of the individual to learn foreign languages. This will be referred to as language aptitude.

At a time when bilingual education for bilingual populations is considered not only desirable but legally required, it is important that we more fully explore the consequences of childhood bilingualism. In view of the positive relationship found to exist between bilingualism and general intelligence, it will be the hypothesis of this study that childhood bilingualism will have a positive effect on adult foreign language learning aptitude.

For the purpose of this experiment, it will be necessary to define the term bilingual. Some uses of the word may refer to any individual who has had any exposure at all to a second language while others would like to limit the term only to those individuals who can use two or more languages in an equally efficient and sophisticated manner. Fishman, (1956), for example, states that it is unreasonable to expect mastery of both languages from all bilinguals, and he defines bilingualism as "demonstrated ability to engage in communication via more than one language." A different view is expressed by O'Doherty (in Peal and Lambert, 1972) who distinguished between the pseudo-bilingual and the genuine bilingual. According to his definition, "The pseudo-bilingual knows one language much better than the other and does not use his second language in communication. The true bilingual masters both at an early age and has facility with both as a means of communication." I feel that the latter definition excludes many people who could communicate in more than one language but might be limited by factors such as a lack of vocabulary in certain topics of conversation.

Segalowitz and Gatbonton (1977) point out that "in most regions of the world nonfluent speakers outnumber the fluent bilinguals."

There is certainly great variation in the extent to which bilinguals can use languages. I will use Fishman's definition for the purpose of this study. I have rejected the more rigid definition because if the bilingual group examined were limited to only those individuals who had attained considerable mastery in both languages, I might be excluding those who did not achieve this mastery due to lower language aptitude, and thus it would be impossible to measure the relationship of language aptitude to bilingualism.

There is an intermediate group who do not meet the definition for bilinguals since they do not actively use a second language for communication. Yet, they are not pure monolinguals either. I am referring to those individuals who had the opportunity to hear others use a second language and who gained only a limited passive understanding of this language. For example, there are many individuals in the New York area whose parents or grandparents occasionally spoke Yiddish to each other, and although they never spoke the language, these individuals are able to understand a bit of what is said and to recognize certain frequent expressions. I consider such individuals part of a separate group and I will exclude them from this study. I do, however, feel that the effects of this kind of language exposure should be investigated in the future.

I will also limit the group of bilinguals to be considered in this study to those who acquired a second language before puberty (ages 10-15). Lenneberg (1967) has postulated a critical period for language acquisition, and other researchers have supported this hypothesis to the following extent: It appears that after puberty it is only the exceptional adult who is capable of learning a second language so well that he can speak without errors and be taken for a native. Seliger, Krashen and Ladefoged (1975) have found that "there are limitations on the degree of perfection that may in general be expected from adult second language learners." Nevertheless, children who find themselves in new linguistic environments seem capable of adapting with amazing speed and in most cases will learn the new language perfectly. (Of course, an adequate opportunity for children to interact and relate to speakers of the target language must exist in order for this to occur.)

This difference in language learning between children and adults has been attributed to several factors including lateralization of the brain (Lenneberg, 1967), adult cognitive maturity, entry into the state of formal operations (Krashen, 1974), and adult development of a monitoring device (Krashen, in press). Krashen and Seliger (1975) have found that many adults can be aided by a formal analysis of the language to be learned, an abstraction apparently not required by the child (Dulay and Burt, 1973). This suggested to me that adult language learning aptitude

might possibly be related not only to bilingualism in general, but specifically to the conscious experience of the individual with formal grammatical systems. Those children who have had formal education in more than one language may have more experience and familiarity with different language systems dealt with on a formal and conscious level. I therefore predicted that bilinguals who had been formally educated in two or more languages as children would show a greater positive correlation with increased adult language aptitude than their counterparts who had not had similar formal training.

Another factor considered was whether learning more than one additional language would be more helpful than learning a single second language. William Stewart (personal communication) has suggested that the number of languages and the intervals at which they are learned may be an important factor in adult language aptitude. However, an analysis of norms for the Modern Language Aptitude Test (Carroll and Sapon 1959) showed that previous language training had very little effect on scores.¹

A difficulty anticipated in investigating polylinguals, i.e., individuals who spoke three or more languages, was that naturally high language aptitude could have resulted in success in first attempts at second language learning. This initial success might have encouraged these individuals to learn additional foreign languages. Fortunately, answers to questionnaires showed that

exposure to more than one foreign language in childhood, for the subjects tested, was the result of the presence in the subjects' families of speakers of several foreign languages, the function of a second language in religious customs,² or both. Thus, exposure to additional foreign languages was not brought about by the native language aptitude of the subjects.

Motivation has been shown to be an important component of second language learning success (Gardner and Lambert, 1972). In the case of this study, it would be impossible to assess the views of individuals towards specific language communities since it is language aptitude in general that is being investigated, not its application in a specific language setting. Also, the Modern Language Aptitude Test which was used to measure language learning ability does not purport to measure motivation. What was possible was to determine whether the subjects consider it an asset to learn foreign languages in general, and a question relating to the importance that subjects, their families and their friends attach to language as an asset was included as a matter of interest.

The Experiment

The subjects for this experiment were 93 students from Queens and Brooklyn College. All were either native Americans or had come to the United States before age 5 and had native proficiency in English. Those students who did not meet this criterion were not included since the aptitude test given depends

upon knowledge of English vocabulary, spelling and syntax. Also, those students who had some second language exposure before age 10 but did not meet the definition for bilingual were not included in the data. Of the 93 students, 57 had no second language exposure before age 10 while 36 were exposed to at least one second language before age 10.

Students were matched for socio economic background on the basis of a detailed questionnaire. Differences in IQ were assumed not to be relevant since all students came from the City University. It was found that each group had about the same ratio of male to female students (females predominated) and groups were about evenly matched for parents' educational level and occupations. The average age and college class was also about the same for both groups. Thus socio economic factors, age, sex, college class and IQ should not influence the results of this experiment.

Language Aptitude was measured by the Carroll Sapon Modern Language Aptitude Test. Because time was limited to one class session, the short form of the test was administered. College and high school grades in foreign language courses were included and students were asked to rate their own language ability on a scale from 1 to 5. (1=poor, 5=excellent)

Students were also asked to rate the importance of foreign language learning as an asset on a scale from 1 to 5 (1=not an asset, 5= a great asset.) They were asked to rate their own views as well as their interpretations of the views of their parents and friends.

for purposes of comparison, subjects were divided into the following subgroups:

MONOLINGUALS: Those individuals who had no second language exposure before age 10. (57 subjects)

BILINGUALS: Those who had exposure to at least one second language before age 10 and were able to use at least one second language for communication. (36 subjects)

BILINGUALS WITH FORMAL EDUCATION: Those bilinguals who had formal education in at least one second language before age 10. (19 subjects)

BILINGUALS WITHOUT FORMAL EDUCATION: Those bilinguals who had no formal education in a second language. (17 subjects)

POLYLINGUALS: Those bilinguals who learned more than one additional language before age 10. (10 subjects)

Nine out of the ten polylinguals also had formal education in at least one second language so that it is not possible to assume results for polylinguals who did not have formal second language education.

SIMPLE BILINGUALS: Those bilinguals who learned only one second language before age 10. (26 subjects)

Hypothesis

- A. Childhood bilinguals are better foreign language learners as adults than monolinguals.
- B. Formal education in second languages will result in greater foreign language learning ability.

C. Childhood polylinguals are better foreign language learners as adults than monolinguals or bilinguals.

Evaluation of the Data

Hypothesis A

Bilinguals scored higher than monolinguals on all four measurements of second language learning ability. Scores on the MLAT and self rate were significant at the .01 level.

High school grades were better for bilinguals, but only at the .10 level, and the difference in college grades was found not to be significant. Thus significant statistics confirm hypothesis A and no data contradict it.

Hypothesis B

Bilinguals with formal education in a second language scored higher for MLAT, and college grades than bilinguals without formal education in a second language. These scores did not reach statistical significance, although the college grades difference did reach the .10 level indicating a trend.

It is interesting that bilinguals without formal education in a second language scored themselves higher for general language learning ability, and these scores were significant at the .05 level. Perhaps formal education is helpful in terms of formal language learning situations such as classrooms and tests, while it may inhibit learning in natural situations. Another possibility is that the subjects rating of themselves means that formal training

in second languages (as it was experienced by these students) can detract from self confidence as far as language learning is concerned. It should be noted that no objective measures show that lack of formal training in second languages correlated with better language learning aptitude.

Polylinguals

Polylinguals scored higher on MLAT, High School and College grades than any other group. Their score was lower for self rate than other bilingual subgroups but higher than that of monolinguals. As compared with simple bilinguals, differences in college grades were significant at the .05 level while MLAT and High School grades only achieved the .10 level. The difference in self rate was not found to be significant.

As compared with the monolingual group, polylinguals were rated higher on all four scores. MLAT and high school grades were found to be significant at the .05 level while differences in college grade and self rate did not reach significance.

There were only ten individuals in the polylingual group and nine of them had formal education in at least one second language. It is therefore impossible to separate the influence of polylingualism from that of formal education. Nevertheless, there is an indication that multilingualism in childhood is beneficial to adult second language learning aptitude.

a cumulative positive effect. Also, bilingualism and language learning aptitude seem to correlate with the view of the individual that speaking a foreign language is an asset.

Limitations and indications for further research

The subjects in the experiment were all college students, mostly from middle class backgrounds. Testing should be done for a more diversified population in terms of educational and socio-economic status. Also, the consequences of learning relatively diverse or similar languages should be explored. Finally, more conclusive research is needed in terms of the roles of formal education and motivation in the second language learning process.

NOTES

1. Scores for the Modern Language Aptitude Test have been shown to predict success in language learning for formal (classroom) situations. The relationship of these scores to success in informal or natural language learning situations is not certain.

2. Although there are individuals who can read languages such as Hebrew or Latin for prayer only and can't use these languages for communication, there were no such subjects in the sample.

Summary of Subgroup Relationships

When all subgroups were compared, the most frequent rank of scores from highest to lowest was as follows:

polylinguals, bilinguals with formal education,
bilinguals without formal education, monolinguals.

The Kendall Coefficient of Concordance was calculated for the variables: MLAT High School Grade, College Grade and Self Rate. The rank order correlations of these four dependent variables were significant at the .01 level ($W=.1,375$).

Language as an Asset

Bilinguals in general rated the importance of learning foreign languages higher than did monolinguals although all students rated language as an asset highly. (4.1 to 5) On all three questions, (self, parents, and friends) polylinguals had the highest rating and monolinguals had the lowest. All groups were quite close in their assessments of their friends views (3.4 to 3.6).

Summary Of Findings

All significant findings point towards the conclusion that bilingualism in childhood is indeed a positive factor in adult second language learning aptitude. Formal education may be a positive factor for formal learning situations although it may have a negative effect on the self confidence of the learner. Learning several different languages in childhood appears to have

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Table I

	BILINGUALS	vs.	MONOLINGUALS	p
MLAT	62.3		54.8	.009
High School Grades	91.2		89.6	.09
College Grades	90.5		89.6	.23
Self Rate	4.0		3.6	.007

The Statistical Package for the Social Sciences was used to compute statistics. Ratings of significance (p) are based on the T test of significance of difference between groups.

p < .01 means results are highly significant.

p < .05 means results are significant.

p < .10 means results do not reach significance, but do indicate a trend.

Table II

	Bilinguals with formal education	vs. Bilinguals without formal Education	P
MLAT	63.6	60.9	.30
High School Grades	92.2	90.2	.15
College Grades	91.6	89.4	.10
Self Rate	3.8	4.3	.05

Table III

	POLYLINGUALS	vs. SIMPLE BILINGUALS	P
MLAT	67.7	60.3	.09
High School Grades	93.4	90.4	.08
College Grades	93.3	89.6	.03
Self Rate	3.9	4.3	.25

Table IV

	POLYLINGUALS	vs. MONOLINGUALS	P
MLAT	67.7	54.8	.015
H.S. Grades	93.4	89.6	.031
College Grades	93.3	89.6	.19
Self Rate	3.9	3.6	.33

Table V

	POLYLINGUALS		BILINGUALS with formal education		BILINGUALS without formal education		MONOLINGUALS	
MLAT	67.7	>	63.6	>	60.9	>	54.8	
H.S. Grades	93.4	>	92.2	>	90.2	>	89.6	
College Grades	93.3	>	91.6	>	89.4	<	89.6	W=.1375 significant at .01 level.
Self Rate	3.9	>	3.8	<	4.3	>	3.6	

Table VI

RATINGS FOR LANGUAGE AS AN ASSET

	POLYLINGUALS		BILINGUALS with formal education		BILINGUALS without formal education		MONOLINGUALS
Self	5		4.9		4.6		4.1
Parents	4.7		4.4		4.7		3.4
Friends	3.6		3.4		3.6		3.4